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ABSTRACT

Existing technologies that may have to be accommodated in libraries of the future include: microform catalogs, on-line catalogs, automated circulation systems, automated acquisition systems, video equipment, on-line reference services, facsimile transmission devices, microform reader-printers, and on-line cataloging terminals. Most of these devices and activities will require increased space in the library's public service areas, staff work areas, and mechanical areas. Major problems to be considered include: (1) heat generated by the devices, (2) requirements for special lighting conditions, (3) noise caused by the devices, (4) the need for plentiful electrical lines and outlets, and (5) special space needed for large transformers for computers and for telephone company equipment. (PF)

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THE NEW TECHNOLOGY AND/OR USES OF OLD TECHNOLOGY

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THE NEW TECHNOLOGY AND/OR NEW USES OF OLD TECHNOLOGY

How does one plan for future technology, when we really don't know the directions that technology will take. It is difficult enough just trying to plan for the uses of currently available technology which may be used by the library in the future, let alone attempting to define the direction that future technology will take us.

There are two completely different approaches in space planning for the new technology that one must take into consideration. It is one thing if you are going to build a new building and put in the desired outlets, capabilities, etc. for the new technology. That becomes a matter of your determining what you want and how it relates to your service program and then it's up to the engineer, the architect and interior designer to fit those requirements technologically and people-wise into the library's program and make them work. It's another totally different problem when you are building perhaps a new facility in a library system where you already have a number of other buildings out there or even only one other building out there which is not going to have the planning and the engineering necessary to make the transition an easy one. Let me point out briefly some of the kinds of problems that exist in that kind of a situation. For instance, you could begin an active videotape program in a new building for which you could build in the necessary equipment for previewing, screening, editing, testing, reviewing, etc. in this one library and you probably could even, if you have a strong enough political base, justify only doing it in that one library and making the tapes only available at that spot. However, if on the other hand, you were going to move to a microfilm catalog, and that can be either roll film or fiche, depending on your preferences and the money available, it is much more difficult to just produce a catalog for an installation if you're in a larger system. There will be specialized exceptions to this case but on the whole where one is going to develop a catalog based on a machine readable data base, it pro-

bably will make good economic sense and be reasonable long range planning to develop the data base for the total system and thereby spread the developmental cost over a far greater number of units and also expand your service potential rather dramatically by allowing all areas of the library system to see the total collection. When you do this of course what you've immediately done is generate a large number of problems for yourself in those older buildings out there that are going to have to accommodate some new kinds of equipment.

What are the various technologies that we may have to cope with? Let me briefly go through a few that I've noted here:

1) Microfilm catalogs, and here I've put either fiche catalogs or roll film catalogs. Although there are not very many around today, I think that by 1980, there are going to be a significant number of them in the country.

2) The next step beyond the microfilm catalog, and I think that perhaps some people will leapfrog and go directly to this is the On-Line catalogs. This is the CRT or the terminal hooked directly to the data base showing your catalog and perhaps a lot of other library's catalogs available to the public in a mode that will allow them to search author, title, subject, keyword, etc.

3) Automated circulation systems - these will undoubtedly be on line also in a real time mode and will allow instant retrieval of a book's location and its status as well as patron status. There are enough of these out there now that they are a factor in the library space planning needs.

4) Automated acquisition systems - once again, there are a lot of these around and many more will come. A good many of these will probably interface with the circulations system so that as you check for a book in the circulation system, you'll find not only those copies you own, but those copies that are on order or that a copy has been received and is in the processing department.

5) Then you move into another area entirely - the video. Here we have video tape, video discs, video tape cassettes - a wide variety of uses here; closed circuit tape broadcasts, clo-

sed circuit live broadcasts, cable television - use by the library both live and tape. The combinations and/or possibilities with video are rather enormous, and I won't attempt to detail all of them, however, there are a couple that I feel I must mention because they will impact significantly on library procedures and space in the future. The first of these is currently being used at two or three libraries, maybe more by now. The closed circuit reference capability on cable TV where the patron calls into the library and the question is such that it can be answered with a single page or two that can be projected back onto the cable channel that the library is using. The patron can go to his television and actually see the answer himself. The next one is simply a refinement of that and that is the two way television reference and once again, this will be a cable facility. It is not active yet any place that I know, however, it's a matter of time. I would suspect that by 1980, which is not that far away, we will see some two way capabilities and some actual use of the two way TV reference, that is an interactive television set with the library's television capability. The first installation of this kind could very easily be between a branch library and the central library, or a business/reference facility.

6) Another service that is going to grow fairly dramatically over the next few years is on-line reference. Utilization of the data bases being developed and stored by Lockheed, SDC and others, whereby you dial in using a regular terminal, specify the data base you want to search, whether it's Chem Abstracts or Phys Abstracts, etc. and do your reference search right then. This is already in use in a significant number of libraries around the country and will grow fairly rapidly over the next decade, particularly as soon as people realize that the cost of a machine search is cheaper and better than the cost of a manual search of the same data base. Perhaps the only restrictive element in this area will be the fact that libraries are probably going to charge for the search when they're using a michine data base. Whereas they have not charged for the manual search previously.

7) Facsimile transmission, which has been tried in a number of areas around the country with varying degrees of success or failure. At this point it is used rather infrequently, partly because technology is not up to what the libraries need, and the cost has been prohibitive relative to the benefits that were gained from its use. However, as time goes on and the equipment gets better and people demand more information more rapidly, we will probably see the time when that kind of facility will be cost beneficial for a number of libraries.

8) Then, of course, in conjunction with the catalogs that I mentioned originally, there are the possibilities of reader-printers. People will be wanting to make instant bibliographies once you have a fiche or film catalog. If you have a reader-printer available for that purpose, the instant bibliography is there. If you have an on-line catalog, the next thing the public will want is a small line printer attached to the CRT so they can hit the button and say "please print" and get printed off a list of books or a bibliography.

9) Finally, the last one that I'll mention - I'm sure there are others, but I will stop with this. The on-line cataloging terminal such as OCLC or BALLOTS or the soon to be activated Washington Library Network. These have already had and will continue to have rather dramatic impact on the space needed and the procedures that will be followed throughout the library community.

What kinds of space do we need for this new technology? Where and how much? Just briefly, we have 4 different areas of concern:

1) The public service areas which will be needed for microfilm catalogs; on-line catalogs, the reader/printers, the on-line circulation and perhaps facsimile transmission.

2) Then we have what I call the semi-public areas which probably are closed rooms or enclosures with limited access, that one will use for the closed circuit reference, two way TV reference, and probably the video tape, discs, cassettes and on line refer-

ence access.

3) Then there is the space one needs in the workroom or in the catalog acquisitions department - it is fairly obvious what kind of things will go on there.

4) Lastly, there is the purely mechanical space that is going to be needed for parts of these new technologies.

In considering the kinds of space for these various "creatures" of the new technology, I think one must take into account the following factors about them.

1) One will notice that they are electrical in nature - they all run off electricity. Therefore, the first thing one needs is an electical outlet. Now, in planning for new buildings, these are relatively easy to accommodate. However, as many as one plans and wherever one puts them there will be a spot where a piece of equipment is wanted where there is no outlet. In an older building there is no way that one is going to be able to get electrical outlets easily. The older the building is, the harder your problems and most computer related equipment requires dedicated electrical lines.

2) The second thing about all these machines is that because they run on electricity, they all generate heat, to a greater or lesser degree. The heat build up is there and I think one has to be aware that this is going to happen. With the smaller electrical users such as the readers or the reader/printers, the CRT's, the heat is not going to be critical to the area. However, if you're installing an on-line circulation system and have the central CPU someplace in the library, that unit is going to generate a lot of heat, and if 3, 4, or 5 CRT's are put close together in a working area, they will generate enough heat to be noticeable. This gross heat generated may not be enough to warrant changing the cooling/heating system, but it will have an effect on the "comfort" index for the employees.

3) The third thing that almost all of the machines are going to do is raise the noise level. Once again, this will be in vastly varying degrees, ranging all the way from very, very, minor, which as the increase in noise caused by fiche readers or microfilm readers, to a fairly significant noise increase from a mini-computer with a couple of disc drives attached. The latter can definitely create enough noise to create a morale problem as it becomes an irritation factor.

4) The other factor that will affect location and space use is communications ability, i.e., telephone lines, cable television lines, etc.

5) A number of these technologies use a projected image on a screen. Light source becomes an important factor. They work better when not in direct sunlight, and preferably, in an area that is somewhat sheltered from direct outside light. It is also better if they are positioned so that the user does not have to stare directly outside as he raises or shifts his eyes from the screen. The contrast between the level of light outside and the level of light on the screen is too much to make comfortable reading.

With those general comments out of the way, I will talk just briefly on the specific kinds of space needed for the various kinds of technology I have previously mentioned. I'll start with microfilm catalogs and the on-line catalogs including the reader/printers. I think one needs either a reader/printer or a line printer. In a central library the space needs for microfilm or on-line catlogs is going to be approximately the same as the card catalog and should be in the same stations or location as the card catalog. However, one will add to that location at least three other access points: a. the reference desk b. the circulation desk c. the workroom(s). Also, in the public service areas catalogs can be put close to special collections and other critical points. In the processing de-

partment where the cataloging, acquisitions, and interlibrary loan is going on, one and probably two catalogs are needed for general use as well as a catalog on every cataloger's desk. These latter affect space very little, however, more electrical outlets are needed. In branch libraries one has different problems than occur in a central library. If one is replacing the card catalog with a microfilm or on-line catalog, more space is needed than was used previously. From my experience, I would say the additional space needed is going to be in the magnitude of 20-25% more for the new catalog than was needed for the card catalog, due to the following factors. For the first time the branch patrons have access to the total collection so they are dealing with a much more complex catalog. Previously they have had a catalog of 30,000 titles, now, all of a sudden, they are confronted with a catalog of 100-200,000 titles or whatever. It is going to be a significantly more complex instrument for them to use, therefore, it will take slightly longer per use. The second part of this is, because of the access to the total collection, they are going to scan much more of the catalog, they're going to search it, they're going to use it more because there's more there for them to find. Just as it will take them longer to find a specific title they are looking for, it will also take them longer because they are going to do a great deal more scanning and looking for things that interest them. Our initial findings seem to suggest that for a branch of 35-40,000 with something like 250,000 circulation a year, instead of 6 or 7 readers we're going to use 8 or 9. This will give you a picture of the kind of increased space you will need. However, the phenomenan becomes even more dramatic when you get into even smaller branches. We have some very tiny outlets, that range between 5-15,000 volumes. We have found that we may need at least twice as many readers as we had originally planned at these small outlets. We started off with between one and three readers, and simply because the patrons of these branches are really using the catalog for the first time, we need more readers. When they had a card catalog, they rarely used it because they could go to the shelf and search easier.

On-line circulation systems are generally going to take less space at the circulation desk than manual systems, simply because they're going to replace a variety of functions: reserve files, patron files, card files, cameras, whatever you have. All these things take space currently, and the automated system will not use more and probably use less. However, unless there has been a centralized circulation department behind the scenes, one will now have to find some space for the central processor to live in, there will be need for terminal space in this area as well, in order to do your updating of book and patron files. This is not too much space - about the equivalent of two desks. Ideally it should be sound insulated and air conditioned. The on-line cataloging and on-line acquisitions systems are both going to take less space than you currently use for those functions. However, they do need different kinds of space. Ideally a terminal should be located in semi-isolation, something similar to an extra large corral or some similar type arrangement where there is enough isolation so the person who is working at the terminal has the requisite peace and quiet necessary for fairly intense concentration. The economics of the machine coupled with the pure difficulty of proofreading or proofing the work done on the CRT demands an exceedingly high rate of accuracy. If one is paying line charges and/or hook up charges "chatting" can not be afforded at the terminal. The video spaces, on-line reference, the closed circuit reference and the two way TV reference, all demand either closed spaces and/or semi-closed spaces, which have controlled public access. The amount of space needed for these activities will be no less than that needed for a small office and could go up to a good sized studio and/or multiple rooms. Video could easily become a space eater unless there is good program definition. With on-line reference one of the major problems, initially is the advertisement, the spreading of the word that you have this service. So, it is useful to have it visible to the public, sparking inquiries; thereby giving you an "in" to explaining its function. If one is going to have facsimile transmission and noise, flashing lights, whirring and buzzing hasn't been reduced to a minimum, I would suggest locating it behind the scenes. Certainly it attracts a lot of attention and is good

PR out front, but it also is extremely disturbing to anyone trying to work around it.

Let me conclude with some problem areas to be aware of in the use of the new technology, and also an admonishment: "don't use new technology to duplicate current procedures."

1) Heat - "machines" generate heat - some of it can be ignored but only to a point and after that there is fall off in staff productivity.

2) Light - the intensity and positioning of the light source is critical to "easy" use of "screens"

3) Noise - some white noise is beneficial but too much noise can be debilitating and a very definite irritant. Noise above the white noise is a decided morale and/or production problem.

4) Computer terminals should be on dedicated electrical lines.

5) Telephone and/or TV cables should not be associated with electrical lines. Even shielded cables are not sufficient sometimes to prevent the disruption of the signal by an adjacent electrical cable.

6) Computers need large transformers and these make a lot of noise and give off significant amounts of heat. You need space in a mechanical room or some place similar.

7) The telephone company needs a closet for their equipment.

8) Electrical outlets and lines - lots of them.

Let me end on the note that planning for all these problems and eventualities is possible with care and thoroughness in a new building. For an older building, you will just have to learn to live with some of the inconveniences.